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ELEVENTH ANNUAL MEETING

DIAGNOSTIC UTILITY OF THE 18F-FDG-PET/CT SCAN IN EBV-POSITIVE SOLID ORGAN TRANSPLANT PATIENTS AT RISK FOR POST-TRANSPLANT LYMPHOPROLIFERATIVE DISORDER

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INTRODUCTION

- Post-transplant lymphoproliferative disorder (PTLD) is major complication following solid organ transplant (SOT)
- Epstein-Barr virus (EBV) major contributing factor
- PTLD encompasses heterogeneous spectrum of diseases and subtypes with frequent non-specific presentation
- 18F-FDG PET/CT scan has high sensitivity for lymphoma, but SOT patients at risk of non-PTLD causes of FDG-avid lesions

OBJECTIVE

To characterize the diagnostic performance of 18F-FDG PET/CT in EBV+ SOT patients at risk for PTLD

METHODS

- Identified patients from CUIMC (any age) who:
  - Received SOT
  - Had history of EBV viremia after 2010
  - Had PET/CT scan performed for suspicion/staging of PTLD
- Reviewed subsequent biopsy reports (if applicable) for PTLD and non-PTLD pathologic findings
- Baseline characteristics abstracted from EMR at time of PET/CT scan
- 18F-FDG PET/CT scans will be reviewed by blinded radiologists for SUVmax, metabolic tumor volume, and other quantitative metrics

RESULTS

- **2,222** patients with history of SOT and EBV viremia after 2010
- **255** (12%) patients who had PET/CT performed for initial PTLD workup
  - **143** (56%) PTLD (+)
  - **112** (44%) PTLD (-)

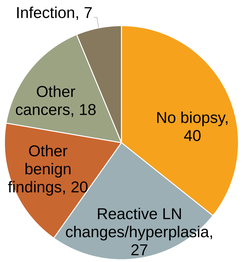
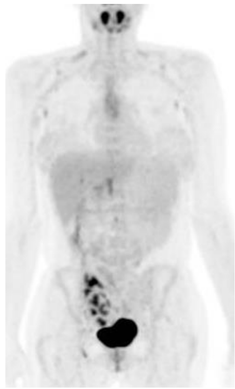


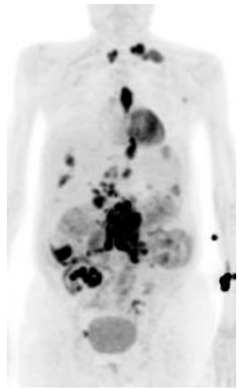
Figure 1. Distribution of pathologic findings in patients who had PET/CT performed and were not subsequently diagnosed with PTLD



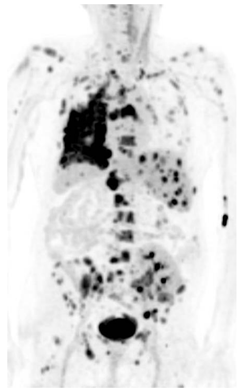
Patient 236. History of renal transplant. Thrombocytopenia and lymphadenopathy. Diagnosed with plasmacytic PTLD



Patient 249. History of renal transplant. Persistent EBV viremia. Found to have follicular and nodular paracortical hyperplasia



Patient 86. History of renal and pancreas transplant. B-symptoms and lymphadenopathy. Diagnosed with M. Avium Intracellulare



Patient 164. History of renal transplant. Weight loss, thrombocytopenia, and lymphadenopathy. Diagnosed with undifferentiated carcinoma

Figure 2. Representative 18F-FDG-PET/CT scans patients with history of SOT and EBV viremia who had subsequent pathologic confirmation of PTLD or non-PTLD-related diseases. Specific patient details including transplant type and diagnosis are included.

CHARACTERISTICS

Characteristic	PTLD (+) N=143	PTLD (-) N=112	p-value
Median age [range]	29 [0-75]	34 [2-79]	0.22
Male (%)	74 (52)	49 (44)	0.21
Peak log EBV [range]	3.45 [1.75-6.11]	3.01 [1.72-5.49]	**0.012**
EBV viremia quantifiable (%)	118 (83)	76 (68)	**0.008**
Time from transplant to PET [range]	62 mo [2-288]	54.5 mo [3-282]	0.75
Transplanted organ (%)			0.27
Heart	44 (31)	28 (25)	
Kidney	40 (28)	21 (19)	
Liver	35 (25)	40 (36)	
Lung	17 (12)	15 (13)	
Intestinal	3 (2)	3 (3)	
Multiple	4 (3)	5 (5)	

DISCUSSION/FUTURE DIRECTIONS

- FDG-avid lesions on PET/CT in patients with history of SOT and EBV viremia oftentimes unrelated to PTLD
- Biopsy is still gold standard for diagnosis of PTLD, but in many cases simply detects follicular hyperplasia
- PTLD (+) patients tended to have higher peak EBV PCR and higher incidence of quantifiable EBV PCR
- Blinded 18F-FDG PET/CT scan review underway to analyze the sensitivity and specificity for PTLD, as well as quantitative metrics that may help discriminate between PTLD and non-PTLD-related conditions

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